

**Assignment: 2****Due date: Wednesday - 15 April 2020 – 3:00 PM**

Course: Object Oriented Programming 2019/2020

Instructors: Dr. Sherin Moussa &amp; Dr. Sally Saad



Ain Shams University  
Faculty of Computer  
& Information Sciences  
2<sup>rd</sup> year

**General instructions:**

- 1) Submit **only** running code.
- 2) For each question, your program should contain only one package named with *"assignments\_package"*
- 3) For each question, Put all your question solution (code) in one .java file.

**Note that:**

- One .java file can consist of multiple classes which belong to the same question with the restriction that only one of them can be public.
  - The name of the public class must be the same as the name of the .java file.
  - After completing your assignment solution, copy your .java file somewhere else and rename it as per rule 5.
  - You can find the .java file at this path .../src/assignments\_package/ XXX.java
- 4) You must adhere to the name of classes, attributes and functions which are mentioned in the problems' definitions.
  - 5) Rename the .java file as follows: (**don't** change the first letter [G, S, B, C, M])

• .java file for General Department	<i>[G]_QuestionNumber_yourSectionNumber_yourID_yourName.java.</i>
• .java file for Software Department	<i>[S]_QuestionNumber_yourSectionNumber_yourID_yourName.java.</i>
• .java file for BIO Department	<i>[B]_QuestionNumber_yourSectionNumber_yourID_yourName.java.</i>
• .java file for Cyber Security Department	<i>[C]_QuestionNumber_yourID_yourName.java.</i>
• .java file for Multimedia and AI Departments	<i>[M]_QuestionNumber_yourID_yourName.java.</i>

- Watch the following video to know how to merge your code in one file.  
[https://drive.google.com/open?id=1AX-T5\\_lfFCHCPMvCOJAp2TSwWycNlec](https://drive.google.com/open?id=1AX-T5_lfFCHCPMvCOJAp2TSwWycNlec)
- 6) Submit **TWO** .java files. The first one contains the solution of question 1 and the second one contains the solution of question 2.
  - 7) If you need to re-submit your assignment. You must type the assignment version number, where the version number is 2, 3, 4 etc.... as the following:

• For General Department	<i>[G]_QuestionNumber_yourSectionNumber_yourID_yourName_VersionNumber.java.</i>
• For Software Department	<i>[S]_QuestionNumber_yourSectionNumber_yourID_yourName_VersionNumber.java.</i>
• For BIO Department	<i>[B]_QuestionNumber_yourSectionNumber_yourID_yourName_VersionNumber.java.</i>
• For Cyber Security Department	<i>[C]_QuestionNumber_yourID_yourName_VersionNumber.java.</i>
• For Multimedia and AI Departments	<i>[M]_QuestionNumber_yourID_yourName_VersionNumber.java.</i>

- 8) The due date is [**Wednesday – 15 April 2020 – 3:00 PM**]. Please use the link below to submit your assignment:

[https://docs.google.com/forms/d/e/1FAIpQLScLO5KCbAExKtK9rUbKm1UWFr\\_ET4bugh\\_kAH2vzLPcGR8foGw/viewform?usp=sf\\_link](https://docs.google.com/forms/d/e/1FAIpQLScLO5KCbAExKtK9rUbKm1UWFr_ET4bugh_kAH2vzLPcGR8foGw/viewform?usp=sf_link)

*Good luck*  
*OOP team 2020*

**Assignment: 2**

**Due date: Wednesday - 15 April 2020 – 3:00 PM**

Course: Object Oriented Programming 2019/2020

Instructors: Dr. Sherin Moussa & Dr. Sally Saad



Ain Shams University  
Faculty of Computer  
& Information Sciences  
2<sup>rd</sup> year

---

As per rule 1, if your code had any errors, your assignment will not be considered. So, if you have any errors in your assignment, use Google to try to resolve your errors and if you didn't find the problem, please contact the TAs through the announced online sessions to help you. **As per rules 5 and 7, if you didn't rename your uploaded file as mentioned above, the automation process will ignore your assignment.**

Marks will be deducted for not following the rules **(-1/instruction)**.

---

*Good luck*  
*OOP team 2020*

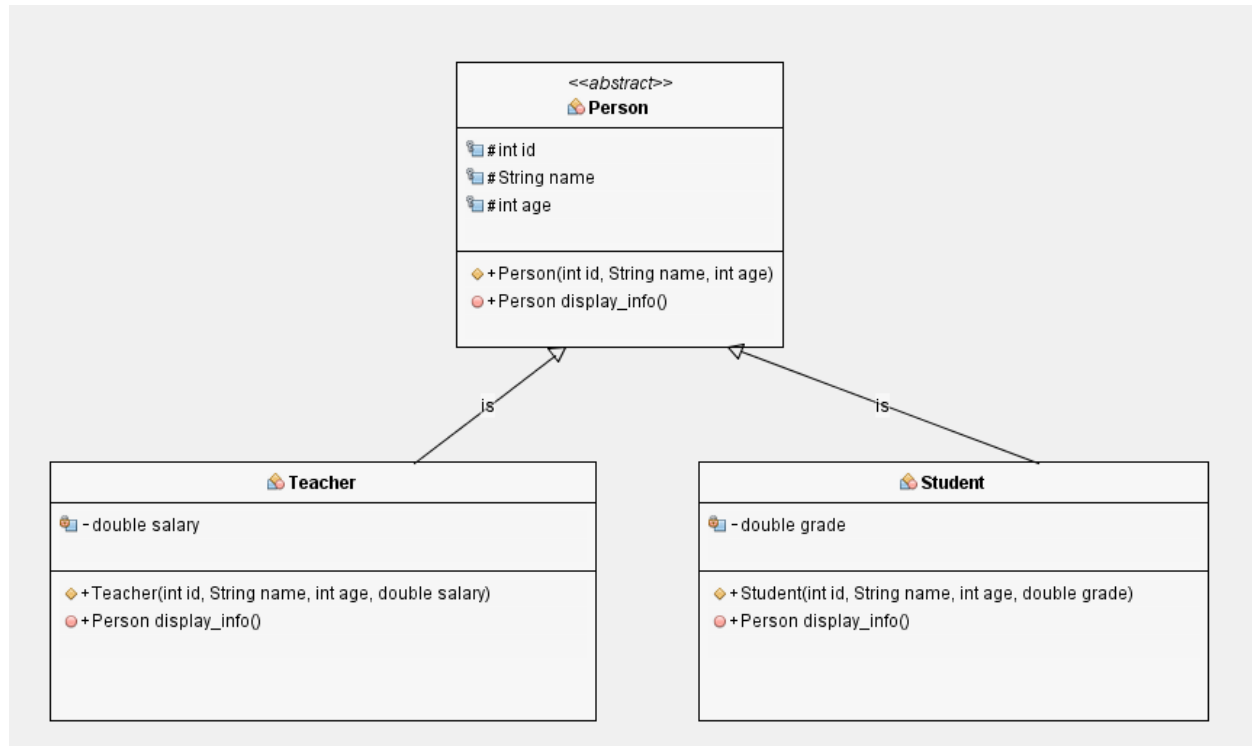
**Assignment: 2****Due date: Wednesday - 15 April 2020 – 3:00 PM**

Course: Object Oriented Programming 2019/2020

Instructors: Dr. Sherin Moussa &amp; Dr. Sally Saad

Ain Shams University  
Faculty of Computer  
& Information Sciences  
2<sup>rd</sup> year

---

**Assignment Questions****Problem 1:**

1. Implement this Class diagram
2. Create this GUI for school's system  
(3 labels, 3 text fields, button, 2 radio buttons)

**Hint:**

You would have to add button group to be able to select one radio button only at a time  
Example on the form:

**Assignment: 2**

**Due date: Wednesday - 15 April 2020 – 3:00 PM**

Course: Object Oriented Programming 2019/2020

Instructors: Dr. Sherin Moussa & Dr. Sally Saad



Ain Shams University  
Faculty of Computer  
& Information Sciences  
2<sup>rd</sup> year

School's Info

☐ Teacher  
☒ Student

ID

Name

Age

Add

3. On selecting Teacher radio button, Salary's label and text field are visible

School's Info

☒ Teacher  
☐ Student

ID

Name

Age

Salary

Add

*Good luck*  
*OOP team 2020*

**Assignment: 2**

**Due date: Wednesday - 15 April 2020 – 3:00 PM**

Course: Object Oriented Programming 2019/2020

Instructors: Dr. Sherin Moussa & Dr. Sally Saad



Ain Shams University  
Faculty of Computer  
& Information Sciences  
2<sup>rd</sup> year

- 
4. On selecting Student radio button, grade's label and text field are visible

School's Info

☐ Teacher  
☒ Student

ID

Name

Age

Grade

Add

5. Create a user defined exception class called InvalidInput that is used to throw a new exception if:
- Grade is negative
  - Grade is more than 100
  - Salary is negative
6. Finally, on clicking the add button you will create new object of Teacher or student according to the radio button's selection "if all your data is valid"
7. Sample run:

**Assignment: 2**

**Due date: Wednesday - 15 April 2020 – 3:00 PM**

Course: Object Oriented Programming 2019/2020

Instructors: Dr. Sherin Moussa & Dr. Sally Saad



Ain Shams University  
Faculty of Computer  
& Information Sciences  
2<sup>rd</sup> year

a. Adding Teacher

The screenshot shows a window titled "School's Info" with a toolbar containing a minimize, maximize, and close button. Below the toolbar, there are two radio buttons: "Teacher" (selected) and "Student". Below these are four text input fields: "ID" (12345678), "Name" (Amira), "Age" (20), and "Salary" (2000). An "Add" button is located below the "Salary" field. A "Valid" dialog box is open, displaying an information icon and the message "New teacher Added", with an "OK" button.

The screenshot shows the same "School's Info" window, but the "Salary" field now contains "-9". An "Error" dialog box is open, displaying a red warning icon and the message "salary can't be negative", with an "OK" button.

**Assignment: 2**

**Due date: Wednesday - 15 April 2020 – 3:00 PM**

Course: Object Oriented Programming 2019/2020

Instructors: Dr. Sherin Moussa & Dr. Sally Saad



Ain Shams University  
Faculty of Computer  
& Information Sciences  
2<sup>rd</sup> year

---

**b. Adding Student**

School's Info

☐ Teacher  
☒ Student

ID: 12345678

Name: Amira

Age: 18

Grade: 500

Add

Error

grade can't exceed 100

OK

School's Info

☐ Teacher  
☒ Student

ID: 12345678

Name: Amira

Age: 18

Grade: -2

Add

Error

grade can't be negative

OK

*Good luck*  
*OOP team 2020*

**Assignment: 2**

**Due date: Wednesday - 15 April 2020 – 3:00 PM**

Course: Object Oriented Programming 2019/2020

Instructors: Dr. Sherin Moussa & Dr. Sally Saad



Ain Shams University  
Faculty of Computer  
& Information Sciences  
2<sup>rd</sup> year

School's Info

☐ Teacher  
☒ Student

ID: 12345678

Name: Amira

Age: 18

Grade: 98

Add Valid

**i** New student Added

OK



## Assignment: 2

Due date: Wednesday - 15 April 2020 – 3:00 PM

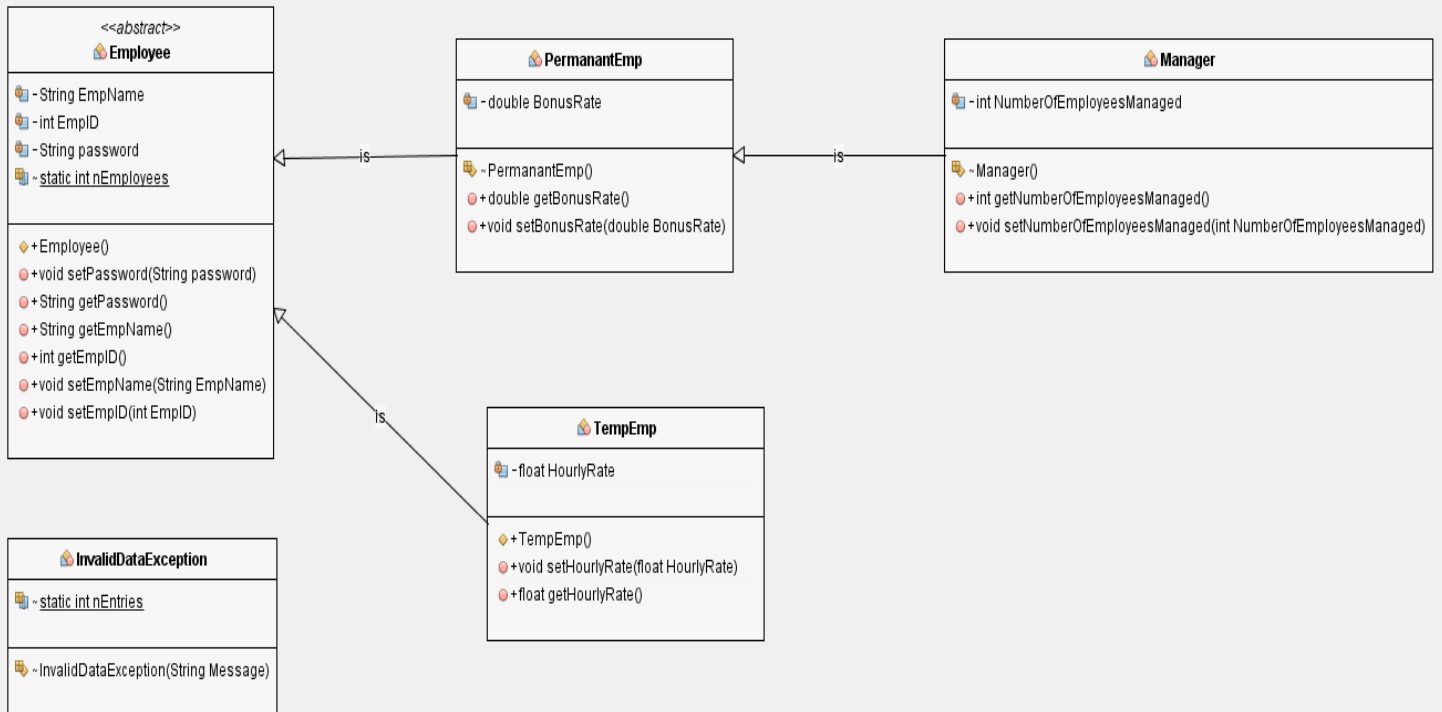
Course: Object Oriented Programming 2019/2020

Instructors: Dr. Sherin Moussa & Dr. Sally Saad



Ain Shams University  
Faculty of Computer  
& Information Sciences  
2<sup>nd</sup> year

### Problem 2:



#### 1- Implement the above UML Diagram

- ➔ Additional UML Note: "InvalidDataException" class extends Exception class
- ➔ Set BonusRate, NumberOfEmployeesManaged, HourlyRate hardcoded in their corresponding class constructors. (i.e BonusRate = 0.1, HourlyRate = 150, etc.)

#### 2- Create GUI form for adding Employee data. The GUI form should look as follows:

*Good luck*  
*OOP team 2020*

**Assignment: 2**

**Due date: Wednesday - 15 April 2020 – 3:00 PM**

Course: Object Oriented Programming 2019/2020

Instructors: Dr. Sherin Moussa & Dr. Sally Saad



Ain Shams University  
Faculty of Computer  
& Information Sciences  
2<sup>rd</sup> year

Employee ID

Employee Name

Employee Password

Re-enter Employee Password

☐ Manager

☐ Permanant Employee

☐ Temp Employee

- 3- In this form's JFrame class create an array of employees of size 3.
- 4- When the user clicks the Add Employee button, you should:
  - a- Set the next index in the employees' array with an object of the class that corresponds to the radio button selected. (e.g if Manager radio button is selected then set the next element of the array as Object of type Manager).
  - b- If no Exceptions were thrown, Set this object's data members with the data input by the user in the text fields.
  - c- Clear all text fields
  - d- If no Radio button is selected, you should throw an "InvalidDataException" with the message "Must Select Employee Type"

**Assignment: 2**

**Due date: Wednesday - 15 April 2020 – 3:00 PM**

Course: Object Oriented Programming 2019/2020

Instructors: Dr. Sherin Moussa & Dr. Sally Saad



Ain Shams University  
Faculty of Computer  
& Information Sciences  
2<sup>rd</sup> year

Employee ID: 1

Employee Name: Ahmed

Employee Password: \*\*\*\*\*

Re-enter Employee Password: \*\*\*\*\*

☐ Manager

☐ Permanent Employee

☐ Temp Employee

Add Employee

Display Extra Attribute

Must Select Employee Type

MyClasses.InvalidDataException: Must Select Employee Type

OK

- e- If the two password fields do not match, you should throw an “InvalidDataException” with the message “The password you entered the second time does not match the first time”

**Assignment: 2**

**Due date: Wednesday - 15 April 2020 – 3:00 PM**

Course: Object Oriented Programming 2019/2020

Instructors: Dr. Sherin Moussa & Dr. Sally Saad



Ain Shams University  
Faculty of Computer  
& Information Sciences  
2<sup>rd</sup> year

The screenshot shows a Windows application window titled "Add Employee". It contains four text input fields: "Employee ID" (containing "1"), "Employee Name" (containing "Ahmed"), "Employee Password" (containing "\*\*\*\*\*"), and "Re-enter Employee Password" (containing "\*"). Below the fields are three radio buttons: "Manager" (selected), "Permanant Employee", and "Temp Employee". Below the form, an error message box is displayed with a yellow warning icon. The message text is: "The password you entered the second time does not match the first time". The error message also includes the exception name: "MyClasses.InvalidDataException: The password you entered the second time does not match the first time". An "OK" button is at the bottom right of the error box.

- f- If the number of invalid entries by the user exceeds 3, you should show this message and disable the Add Employee button.

The screenshot shows two instances of the "Add Employee" form. The left form is active and shows the "Add Employee" and "Display Extra Attribute" buttons as disabled (grayed out). Below it, an error message box is displayed with a red octagonal warning icon. The message text is: "Maximum Number of Invalid data entries reached, try again later". The right form is a faded background version of the same form, showing the same fields and buttons.

*Good luck*  
*OOP team 2020*

**Assignment: 2**

**Due date: Wednesday - 15 April 2020 – 3:00 PM**

Course: Object Oriented Programming 2019/2020

Instructors: Dr. Sherin Moussa & Dr. Sally Saad



Ain Shams University  
Faculty of Computer  
& Information Sciences  
2<sup>rd</sup> year

- 5- When the user clicks the Display extra attribute button, you should:
- a- Check the type of the last inserted employee in the array and
    - if that type is Manager → Display NumberOfEmployeesManaged
    - if that type is PermanentEmployee → Display BonusRate
    - if that type is TempEmp → Display Hourly Rate

A screenshot of a Windows application window titled "Employee Registration Form". It contains several input fields: "Employee ID" with the value "3", "Employee Name" with "Mohammed", "Employee Password" with an asterisk, and "Re-enter Employee Password" with an asterisk. Below these are three radio buttons for "Manager", "Permanent Employee", and "Temp Employee", with "Temp Employee" selected. At the bottom, there are two buttons: "Add Employee" (highlighted with a red rectangle) and "Display Extra Attribute".A screenshot of the same application window, but with a modal dialog box open. The dialog box has an information icon and displays the text "Hourly Rate is 150.0" with an "OK" button. In the background, the "Add Employee" button is disabled, and the "Display Extra Attribute" button (highlighted with a red rectangle) is now enabled.